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Department of Mathematics and Statistics

MATH 140 : CALCULUS II

Problem Set 10 – due Friday, March 6th

INSTRUCTIONS:

Please submit this at the *start* of Friday's class. Don't worry if you don't manage to get an answer for any particular question, but please give each problem an honest try (and record what you were able to accomplish, even if you didn't solve it). Eventually you should make sure to understand the problems, as some of them may appear on next week's in-class quiz. You are encouraged to collaborate with other students on these problems. However, please write up your solutions in isolation from one another.

10.1 Evaluate the following integrals (using only what we've covered thus far in class).

(a) $\int_{-2}^5 x \, dx$

(d) $\int_{-2}^5 (3x - 2) \, dx$

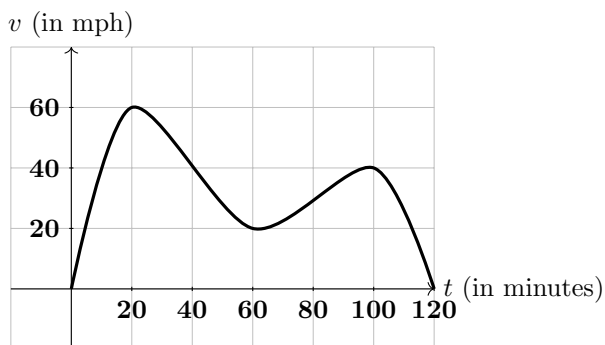
(b) $\int_{-2}^5 3x \, dx$

(e) $\int_{-2}^2 (2 - |x|) \, dx$

(c) $\int_{-2}^5 2 \, dx$

(f) $\int_0^{2\pi} \sin x \, dx$

10.2 Consider the plot below of the function $v(t)$ representing a car's velocity over the course of a two-hour trip:



Plot of the function $v(t)$

Estimate the average velocity of the car over the course of the trip.

10.3 Evaluate $1 + 2 + 3 + \cdots + 2021$ without using a calculator.